



# Radio Telemetry Unravels Some of the Mysteries Surrounding Rainbow Trout and Dolly Varden in the Kenai River



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## Introduction

The Kenai River supports the largest road accessible sport fisheries for rainbow trout and Dolly Varden in Alaska. Both species are caught throughout the Kenai River, but anglers targeting these fish generally concentrate their efforts on the upper and middle sections of river. Participation in these fisheries has increased substantially in recent years with annual catches for each species sometimes exceeding 100,000 fish. Increased participation in these fisheries combined with a poor understanding of basic life history characteristics for these species in the Kenai River prompted studies to examine the migratory behavior and seasonal distribution of rainbow trout and Dolly Varden using radio telemetry techniques.

Kenai Canyon rainbow trout



## Methods

- Radio transmitters were surgically implanted into 279 rainbow trout and 399 Dolly Varden from 1995-2000.
- Fish implanted with radio transmitters ranged from 350-662 mm fork length and were captured with hook-and-line gear from mainstem locations above and below Skilak Lake and four tributary streams in the upper Kenai River watershed.
- Each radio transmitter provided up to two years of location data on individual fish.
- Movements of radio-tagged rainbow trout and Dolly Varden were documented using a combination of fixed data-logging stations and aerial and ground-based surveys.

Surgically inserting a radio transmitter into a Dolly Varden



## Results

### *Rainbow Trout*

- Movement from river feeding locations to overwintering areas began in late September and was complete by late November.
- Skilak and Kenai Lakes were the primary overwintering areas but up to 20% of the radio-tagged fish remained in the Kenai River during winter months.
- Movement from overwintering locations to spawning and feeding areas occurred primarily during May and June.
- Rainbow trout radio-tagged above Skilak Lake spawned in the upper Kenai River and lower Russian River.
- Rainbow trout radio-tagged below Skilak Lake spawned in the mainstem Kenai River below Skilak Lake.
- Kenai River rainbow trout demonstrate a high level of fidelity to feeding, overwintering, and spawning areas.
- Rainbow trout radio-tagged above and below Skilak Lake appear to be two distinct semi-isolated stocks.

### ***Dolly Varden***

- Dolly Varden upstream of Skilak Lake are comprised of multiple subpopulations.
- Spawning occurs primarily during September and October in Quartz Creek, S Fork Snow River, Cooper Creek, and the mainstem Kenai River.
- Most radio-tagged Dolly Varden (98%) selected Kenai or Skilak Lake as an overwintering area.
- Patterns of movement during summer differ among spawning groups, but are correlated with the timing and location of smolting/spawning salmon.
- The Killey River is an important feeding area during June and July for all spawning groups except S Fork Snow River fish.
- All reaches of the mainstem Kenai River are used as feeding areas during August and September.
- Movements of Dolly Varden radio-tagged upstream of Skilak Lake were confined to the Kenai River watershed, suggesting that most fish are resident and not anadromous.



Winter tracking in the Kenai River

### **Management Actions**

- Additional sport fishing opportunity provided to anglers in 1997 by eliminating the fall rainbow trout closure in the Kenai River.
- Fall sport fishing closures established in 1999 for Quartz and Cooper Creeks and South Fork Snow River to protect spawning Dolly Varden.
- Additional sport fishing opportunity provided to anglers in 2002 by postponing the spring spawning closure for rainbow trout until May 1.

### **Acknowledgements**

The Kenai River Sportfishing Association provided financial support for the project during 2000 by purchasing 200 radio transmitters.



Releasing a tagged rainbow trout



Tracking in Kenai River Canyon

### **More Information**

Detailed information on these projects can be found in the following reports:  
Migratory behavior and seasonal distribution of radio-tagged rainbow trout in the Kenai River, Alaska.  
Migratory patterns of different spawning aggregates of Dolly Varden in the Kenai River Watershed, Alaska, 1998-2001